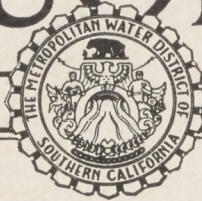


• COLORADO RIVER •  
**AQUEDUCT NEWS**

THE METROPOLITAN WATER DISTRICT

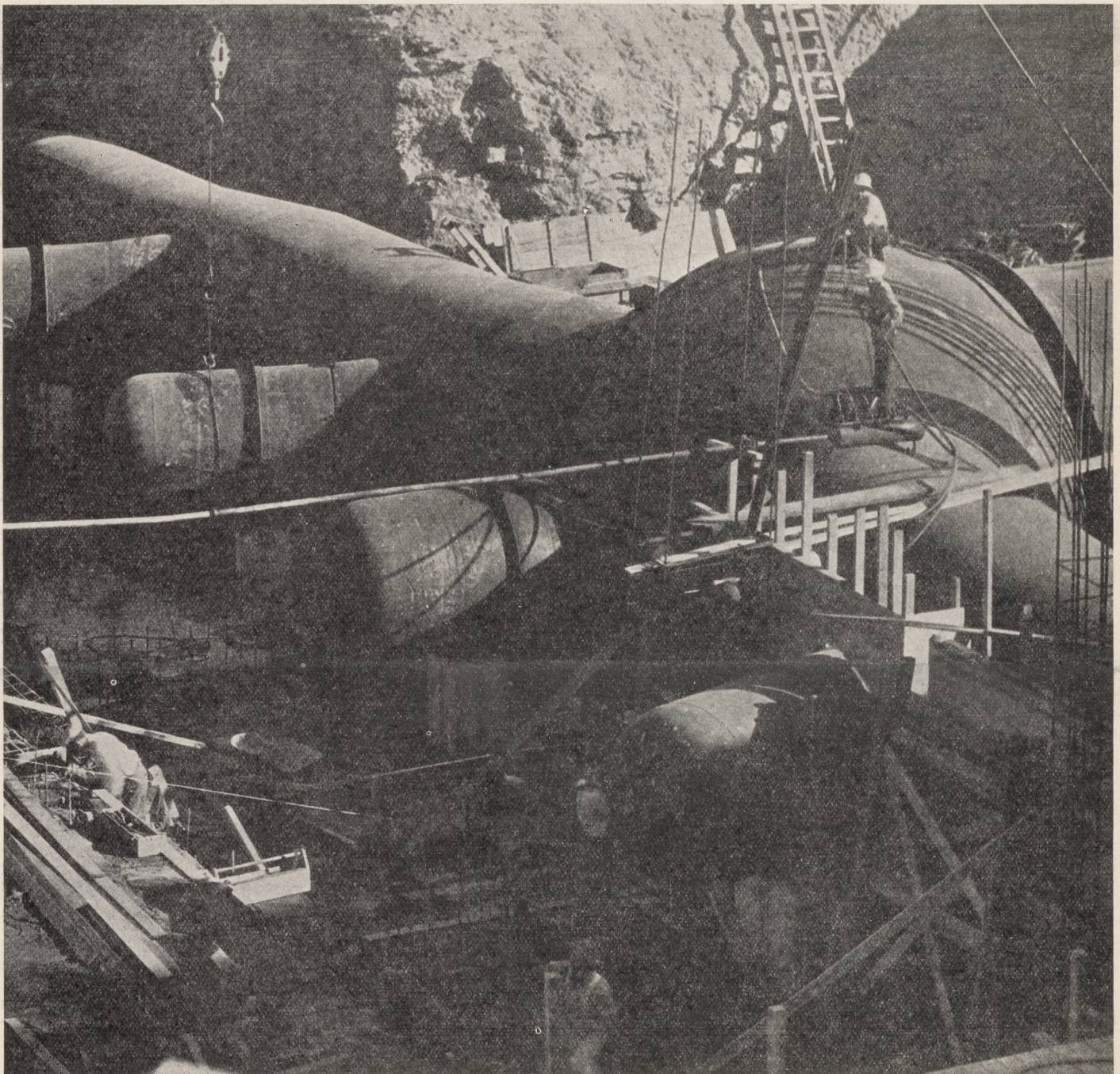


OF SOUTHERN CALIFORNIA

Vol. III.

NOVEMBER 10, 1936

No. 21



Installing the Gene Pumping Plant manifold. After being assembled in a Los Angeles fabricating plant, it was knocked down and shipped to the Gene plant, and is now being set up in its permanent location.



# **COLORADO RIVER AQUEDUCT NEWS**

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

LOS ANGELES, CALIFORNIA

*Published twice monthly in the interest of Field and Office Workers on the Colorado River Aqueduct, and for the information of all other citizens of the Metropolitan Water District.*

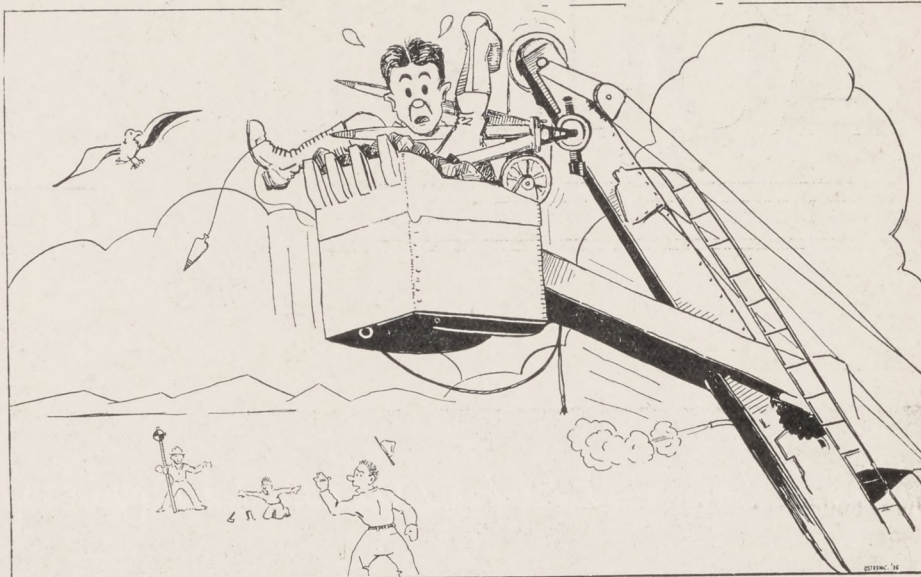
Vol. III November 10, 1936 No. 21

## **Iron Mt. Tunnel Lining Completed**

At 5:30 P. M. on October 30, the last yard of concrete was placed in the lining of the seven and a half mile Iron Mountain tunnel. The completion of lining on this date in East Iron Mountain had been preceded, by just one week, by the placing of the last concrete in West Iron Mountain—placed on October 23.

Because of the nature of the tunnel, the work was let as two separate schedules. The eastern portion, 23,645 feet in length, was constructed by Winston Brothers, who started to work on August 9, 1933. Excavation operations were carried on in this portion from a shaft 165 feet deep, and located 9,902 feet west of the east portal. Headings were driven east and west from the bottom of this shaft, holing out to daylight at the east portal, and driving 13,743 feet to the western end of the schedule. On January 12, 1936, the Winston crews holed through into the west portion of the tunnel constructed by the Utah Construction Company. The Utah crews had completed their part of the excavation on August 12, 1935. Driving from the west portal of the tunnel, they excavated 16,208 feet.

Under the direction of General Superintendent R. V. Johnson, the Winston crews started lining the East Iron tunnel on January 20 of this year. Working from west to east, they actually placed the first 20 feet of lining in the West Iron schedule—as repayment for services by the Utah Company. Ben Arp, general superintendent for the Utah Construction Co., started his crews lining on April 1, 1936. J. L. LaFond is the District's senior inspector on East Iron, and George Trask is the M. W. D. chief inspector on the West Iron Mt. schedule.



### **LITTLE MAN WHAT NOW?**

Did someone say, "It can't happen here?" If this "transit man's nightmare" and "shovel runner's delight" ever coincide, this may be the result.

## **Directory**

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Transmission.....Robert N. Allen  
**SUPERINTENDENTS**  
(Main Aqueduct Tunnels)  
Colorado River, Copper Basin and Whipple Mt. Tunnels, Walsh Construction Co., W. A. Huntington and L. M. Ramey, Tunnel Supts.  
Coxcomb and East Iron Mt.

tunnels, Winston Bros., R. V. Johnson, Gen. Supt.  
Iron Mt. Tunnel, West Portal, Utah Construction Co., Ben Arp, Gen. Supt.  
East Eagle Mt. Tunnel and West Eagle Mt. Tunnel, east portion, Broderick & Gordon, John Will, Gen. Supt.  
Coachella Tunnel, Dist. Force Acct., R. C. Booth, Gen. Supt.  
East Coachella Tunnel and 1000 Palms Tunnel, Concrete, V. T. Davis, Supt., J. C. Fischer, Guy Taylor, Gen. Foremen.  
All Coachella Siphon Construction, M. Hjalmarson, Supt.  
West Coachella Tunnels and Conduits, Concrete, Edwin Noon, Superintendent.  
Little Morongo, Excavation, R. Ferry, Supt.  
San Jacinto Tunnel, District Force Acct., B. C. Leadbetter, Gen. Supt.; A. L. Simpson, John Austin and C. E. Sides, Tunnel Supts.; Chas. F. Thomas, Jr., Gen. Foreman.  
Valverde Tunnel, Dravo Contr. Co., R. W. Remp, Gen. Supt.; H. C. Richardson, Asst. Gen. Supt.; Fred Youmans, Tunnel Supt.

### **(Distribution Tunnels)**

Monrovia tunnels Nos. 1, 2 and 3, West Construction Co., H. E. Carleton, Gen. Supt.; O. V. Humason, Peter Brisbols and Angus MacDonnell, Tunnel Supts.  
Sierra Madre tunnel, J. F. Shea Co., Inc., Edmund H. Shea, Supt.  
Pasadena tunnel, San Rafael tunnels Nos. 1 and 2, and Monrovia tunnel No. 4, L. E. Dixon Co., Bent Bros., Inc., and Johnston, Inc., S. D. Hackley, G. A. Scott and W. N. Evans, Supts.

### **(Canal, Siphon, Conduit)**

Schedules Nos. 1, 1A, 1B, 10, 10A, 10B, 11, 11A, 11B, 11C, 13, 13A, and 13B, Aqueduct Construction Co., S. T. Corfield, Gen. Supt.; Charles Harlowe, Jr., Excav. Supt.  
Schedules Nos. 2, 2A, 2B, 3,

3A, 3B, 7 and 7A, Barrett & Hilp and Macco Corp.; H. W. McKinley, Supt.

Schedules Nos. 4, 4A, 5 and 5A, Jahn & Bressi Construction Co., Joseph Muscolo, Gen. Supt.; Dominick Bressi, Asst. Gen. Supt.

Schedules Nos. 6, 8, 8A and 8B, Clyde W. Wood and M. J. Bevanda, A. F. Weesner, Gen. Supt.; L. L. Green, Excav. Supt.; A. V. Fisher and V. S. Price, Concrete Supts.

Schedules Nos. 9, 9A, 9B and 9C, The Utah Construction Co., Ben Arp, Gen. Supt.; E. C. Caldwell, Excav. Supt.

Schedules Nos. 12 and 12A, Three Companies, Inc., C. J. Kavanagh, Supt.

Schedules Nos. 14, 15 and 16, Thompson-Starrett Co., Inc., Rodney Smith, Resident Engineer; William Hayes, Excav. Supt.

Schedule 17, Dist. Force Acct., H. Hjalmarson, Supt., (Fan Hill).

Schedule 18J, Morrison-Knudsen, J. O. Young, Gen. Supt.

Schedules Nos. 18, 19 and 20, J. F. Shea Co., Inc., H. F. Rennebohm, Supt.

Schedules Nos. 20A, 20B, 20C, 21, 22 and 23, The Griffith Co., Harry Davis, Supt.

### **(Distribution Pipe Line)**

Schedules No. 4P & 5P, American Concrete & Steel Pipe Co., Wm. A. Whiting, Gen. Supt.; D. H. Rankin, Plant Supt. and Const. Supt.

Schedules 6P & 7P, J. F. Shea Co., Inc., Gilbert Shea, Gen. Supt.; Don Lind, Plant Supt.

Schedule 8P, United Concrete Pipe Corp., John Huber, Plant Supt.; Charles Johnston, Const. Supt.

Schedules 2B & 2S, Western Pipe & Steel Co., L. L. White, Supt.

### **(Dams)**

Cajalco dam, The Griffith Co., Harry Davis, Gen. Supt.  
Parker dam, Six Cos., Inc., Frank Crowe, Gen. Supt.; E. A. Moritz, Eng. in charge.





## FORGOTTEN

*unless You remember*

This picture, and its message, is an adequate plea to the thousands of aqueduct builders to do their bit toward taking care of those who can not take care of themselves. The men and women who are building the Colorado River Aqueduct are rapidly making good on their proud boast that they are contributing to the future of Southern California. Less spectacular, but equally important, has been the personal contribution each year by these same men and women to the needs of the present, by their contributions to the Community Chest. On each of the past annual drives by the Chest, Aqueducters have maintained the enviable record of equalling and exceeding their quota. The same spirit of common endeavor is manifest this year among the employees of the District.

General Manager Weymouth on November 3 in a letter to Division and Section Heads stated, "In line with its usual practice, the Metropolitan Water District of Southern California is giving its full cooperation to the Community Chests in the cities of the District. This year, as previously, the Los Angeles Community Chest is acting as a medium of contact between these organizations and the District . . . It is sincerely hoped that all employees will support this worthy cause and give their full cooperation."

"Employees making contributions to the Community Chest have the right to allocate their contributions to their home city. Special pledge cards have been provided for District employees, and these cards have a space where the employee may designate the city and charity to which the contribution is to be forwarded."

The Chest itself is not a charity group. Instead, it collects and distributes funds to 91 different agencies, none of which receive governmental funds. Seventy per cent of the Community Chest expenditures are for children—forgotten unless you remember.

## Cajalco Outlet Excavated

Excavation of the odd size tunnel of the aqueduct, the 14-foot diameter Cajalco Outlet tunnel, was completed by Broderick and Gordon crews on October 26. This tunnel is 2,439 feet long and will carry the aqueduct water from the Cajalco Reservoir to the upper feeder of the distributing system. The tunnel will have a combination lining of gunite, steel cylinder, and concrete. A steel cylinder ranging in thickness from  $\frac{1}{4}$  inch to  $\frac{7}{16}$  inch will run the entire length of the tunnel. Between this and the tunnel walls will be a concrete lining approximately one foot thick, and a two-inch gunite lining will be placed on the inside of the steel cylinder. Broderick and Gordon, sub contractors for the Griffith Co., started excavation on May 26, under the direction of Superintendent Sam Funsett. R. B. Ward is the M. W. D. resident engineer at Cajalco, and W. L. "Bill" Saunders is the District's senior inspector on the tunnel.

The Third and Broadway Building Co., owners of the L. A. headquarters building, are remodeling the elevator system, which will include new cars, a new signaling system, and new doors on the main floor.

## Diversion Completed at Parker Dam

For the second time in recent years, the Colorado River has been pushed out of its natural channel and detoured thru giant diversion tunnels so that man may continue his task of harnessing the river and putting it to work. Under the direction of Frank Crowe, who also directed the diversion of the river at Boulder Dam, the Colorado was diverted at Parker Dam on October 21. Diversion, by the construction of a temporary upstream dike, was started at 10:15 P. M. on the 21st and completed the following day. The downstream outlet channels from the diversion tunnels were cleared first, and for a while the river water actually flowed north — or upstream—in the tunnels, until the water level inside and outside the tunnels had been equalized. Latest reports from Parker Dam state that dewatering of the river bed was started on October 26, and is now completed. Construction of a lower, temporary cofferdam is now under way. The next step will be the building of the permanent upper and lower cofferdams, after which excavation for the foundation of the Parker Dam itself will be started. Excavation will probably reach a maximum depth of 250 feet below the river bed.



Frank Crowe, Superintendent for the Shea Company at Parker Dam, watches the Colorado River being shoved over into the two 29-foot diversion tunnels. This picture was taken at the upstream portals on the morning of October 22.



# CONSTRUCTION

## TUNNELS

TUNNEL EXCAVATION (MILES)  
Completed Remaining

Aqueduct ..... 86.57 5.54  
Distribution ..... 15.04 1.16  
Total ..... 101.61 6.70

October 1 to October 31, 1936

\*TUNNEL LINING (MILES)  
Completed Remaining

Aqueduct ..... 64.08 28.03  
Distribution ..... 4.54 11.62  
Total ..... 68.62 39.65

\*Arch considered to equal 0.9 completed section.

### TUNNEL PROGRESS

CONTRACTOR	TUNNEL	LENGTH IN FEET	EXCAVATION IN FEET					LINING IN FEET					
			NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN- ING	ARCH OR INVERT	NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAIN- ING
AQUEDUCT—CONTRACT													
WALSH CONSTRUCTION CO.	COLORADO RIVER	5,482		Completed		5,482	0	Arch			0	5,475	7
	COPPER BASIN NO. 1	705		Completed		705	0	Invert			0	5,475	7
	COPPER BASIN NO. 2	11,568		Completed		11,568	0	Arch			0	696	9
	WHIPPLE MOUNTAIN	(32,238)		Completed		(32,238)	(0)	Invert			0	696	9
	East from Adit	18,336		Completed		18,336	0	Arch	68	102.0	6,935	11,568	0
WINSTON BROTHERS	West from Adit	13,902		Completed		13,902	0	Arch	0	0	4	11,568	0
	IRON MT. (E. PORTION)	(23,645)		Completed		(23,645)	(0)	Invert	30	330	9,902	0	(32,238)
	East from Shaft	9,902		Completed		9,902	0	Arch	17	345	5,870	18,327	9
UTAH CONSTRUCTION CO.	West from Shaft	13,743		Completed		13,743	0	Invert			0	13,902	0
	IRON MT. (W. PORTION)	16,208		Completed		16,208	0	Arch	41	284	11,616	16,208	0
WINSTON BROTHERS	COXCOMB (From E. Portal)	17,795		Completed		17,795	0	Invert			0	16,208	0
BRODERICK & GORDON	E. EAGLE (From W. Portal)	9,440		Completed		9,440	0	Arch			0	0	17,795
	W. EAGLE (E. PORTION)	(15,845)		Completed		(15,845)	(0)	Invert			0	0	17,795
	East from Adit	7,871		Completed		7,871	0	Arch	49	92.1	4,516	4,516	9,440
	West from Adit	7,974		Completed		7,974	0	Arch	5	84.6	423	7,974	0
TOTALS		Ft. 132,926 Miles (25.18)				132,926 (25.18)	0	Arch	122	97.4	11,878	102,281	30,645
							0	Invert	.88	311.0	27,388	57,592	75,334

### AQUEDUCT — FORCE ACCOUNT

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	EAST COACHELLA	(96,605)				(96,605)	0							
	East Portion	28,512		Completed		28,512	0	{ Arch			0	28,512	0	
								{ Invert			0	28,129	383	
	West Portion	68,093		Completed		68,093	0	{ Arch	80	48.6	3,885	45,715	22,378	
								{ Invert			0	0	68,093	
	1000 PALMS NO. 1 (From W.P.)	16,058				16,058	0	Arch	79	48.1	3,799	11,736	4,322	
	1000 PALMS NO. 2	3,838		Completed		3,838	0	Arch			0	3,838	0	
								Invert			0	3,838	0	
	WIDE CANYON NO. 1	14,305		Completed		14,305	0	Arch			0	14,305	0	
	WIDE CANYON NO. 2	848		Completed		848	0	Arch			0	848	0	
	SEVEN PALMS (From E. Prtl)	4,810				4,810								
	(From W. Prtl)	11,920		Completed		11,920	0							
	LONG CANYON	15,305		Completed		15,305	0	Arch			0	16,730	0	
	BLIND CANYON	6,836		Completed		6,836	0	Arch			0	15,305	0	
	MORONGO NO. 1	5,725		Completed		5,725	0	Arch	28	88.0	2,465	6,836	0	
MORONGO NO. 2	1,902		Completed		1,902	0					0	5,725		
SAN JACINTO	(68,866)				(39,573)	(29,293)	Arch				0	0	1,902	
												0	(68,866)	
	Cabazon Shaft to East Portal	8,880		0	8,880	0								
	Cabazon to Lawrence	26,817	93	3.5	325	9,973	16,844							
	Cabazon Pioneer	18,119	93	3.8	356	1,479	16,640							
	Lawrence Adit	5,651	93	2.1	196	1,586	4,065							
	Potrero Pioneer	15,163	93	6.8	636	3,022	12,141							
	Potrero to Lawrence	17,670	93	6.4	596	5,221	12,449							
	Potrero Shaft to West Portal	15,499		Completed		15,499	0	Invert	64	364.0	11,963	14,953	53,913	
	TOTALS	Ft. 247,018 Miles (46.78)	186	4.9	921 (0.17)	217,725 (41.24)	29,293 (5.54)	Arch	187	54.3	10,149	143,825	103,193	
								Invert	64	364.0	11,963	46,920	200,098	

### DISTRIBUTION—CONTRACT

GRIFFITH CO.	CAJALCO OUTLET	2,439	49	8.6	420	2,439	0				0	2,439	
WEST CONSTRUCTION CO.	MONROVIA NO. 1 (From W.P.)	7,868		Completed		7,868	0	66	37.9	2,501	6,943	853	
	MONROVIA NO. 2 (From Jct.1)	940		Completed		940	0						
	MONROVIA NO. 3	(32,105)			(1,259)	(29,234)	(2,871)						
	East from Adit	11,340	43	11.2	479	11,340	0						
	West from Adit From West Portal }	20,765	89	4.2	376	5,238	2,871						
			87	4.6	404	12,656					0	(32,069)	
DIXON, BENT BROS. & JOHNSON	MONROVIA NO. 4 (From W.P.)	8,096	81	7.1	575	4,925	3,171				0	8,084	
J. F. SHEA CO., Inc.	SIERRA MADRE (From E. Prtl)	6,700		Completed		6,700	0		Completed			6,700	0
DIXON, BENT BROS. & JOHNSON	PASADENA EAST	5,546		Completed		5,546	0	81	23.5	1,902	5,546	0	
	PASADENA (From West Portal)	12,140		Completed		12,140	0						
	SAN RAFAEL No. 1 (From W.P.)	4,040		Completed		4,040	0						
	SAN RAFAEL No. 2 (From E.P.)	5,669	81	11.8	952	5,569	100						
	TOTALS	Ft. 85,543 Miles (16.20)	430	7.5	3,206 (0.61)	79,401 (15.04)	6,142 (1.16)	Full Section	147	29.9	4,403 (0.84)	23,955 (4.54)	61,382 (11.62)

### COMPLETED TUNNELS

CONTRACTOR	TUNNEL	Length in Miles	Work Started	Work Completed
MORRISON-KNUDSEN CO.	Mecca Pass, No. 1, 2 & 3	1.13	7-17-33	2-10-35
WEST CONSTRUCTION CO.	Whitewater Nos. 1 & 2	1.94	7-18-33	4-15-35
SHOFNER & GORDON	Hayfield No. 2	1.03	7-8-33	7-27-35
HAMILTON & GLEASON	Bernasconi	1.18	4-19-33	11-21-35
J. F. SHEA CO., INC.	Cottonwood	3.81	6-14-33	12-29-35
HUNKIN-CONKEY CON. CO.	Hayfield No. 1	1.84	10-21-33	1-9-36
DIXON & BENT BROS.	W. Eagle—West Portion	2.02	9-8-33	3-12-36
DRAYO CONTRACTING CO.	Valverde	7.20	6-7-33	10-18-36
TOTALS		20.15		



# ON PROGRESS

## CANAL, CONDUIT, SIPHON & PIPE LINES

CANAL, CONDUIT AND SIPHON (MILES)  
Completed Remaining

DISTRIBUTION PIPE LINE (MILES)  
Completed Remaining

Excavation ..... 120.70 24.97  
Concrete ..... 109.20 35.42  
Back Fill ..... 50.29 32.17

October 10 to October 24, 1936

Excavation ..... 15.61 25.97  
Concrete ..... 13.92 27.66  
Back Fill ..... 11.80 29.78

### AQUEDUCT

SCHED. NO.	CONTRACTOR	FEATURES	Length In Feet	EXCAVATION—Feet			CONCRETE—Feet			BACKFILL—Feet		
				Period	To Date	Remain'g	Period	To Date	Remain'g	Period	To Date	Remain'g
1	AQUEDUCT CONSTR. CO.	Conduit and Siphons	22,025	0	22,025	0	0	22,025	0	0	22,025	0
2	BARRETT & HILP	Conduit and Siphons	30,569	0	29,314	1,255	0	24,584	5,985	0	22,400	8,169
3	AND MACCO CORP.	Canal and Siphons	40,499	0	39,574	925	1,196	33,704	6,795	647	2,177	10,168
4	JAHN & BRESSI	Canal and Siphons	53,218	0	53,218	0	0	53,218	0	0	1,992	1,083
5	CONSTR. CO.	Canal and Siphons	53,588	0	53,588	0	0	53,588	0	0	2700	1,320
6	WOOD AND BEVANDA	Siphon	15,521	0	15,521	0	0	15,521	0	0	13,043	2,478
7	BARRETT & HILP & MACCO CORP.	Canal and Conduit	27,707	0	27,707	0	0	27,707	0	0	12,170	0
8	WOOD AND BEVANDA	Canal and Siphons	49,339	0	49,339	0	269	49,163	176	0	7,090	800
9	UTAH CONSTRUCTION CO.	Canal, Conduit and Siphons	47,363	0	46,336	1,027	0	44,074	3,289	0	1,975	4,224
10	AQUEDUCT CONSTR. CO.	Canal and Siphons	44,505	0	44,505	0	0	44,505	0	0	3,594	1,256
11	AQUEDUCT CONSTR. CO.	Canal, Conduit and Siphons	44,002	3,265	21,550	22,452	1,365	1,750	42,252	430	430	9,892
12	THREE COMPANIES, INC.	Conduit and Siphons	32,977	27	28,816	4,161	0	24,652	8,325	0	23,030	9,947
13	AQUEDUCT CONSTR. CO.	Canal, Conduit and Siphons	31,965	0	25,393	6,572	5,838	20,021	11,944	0	0	3,665
14	THOMPSON-STARRETT CO.	Conduit and Siphons	32,366	0	32,366	0	0	32,366	0	0	32,366	0
15	THOMPSON-STARRETT CO.	Conduit and Siphons	35,849	1,949	7,143	28,706	1,919	2,969	32,880	1,060	1,060	34,789
16	THOMPSON-STARRETT CO.	Conduit and Siphons	19,359	0	0	19,359	0	0	19,359	0	0	19,359
17	M. W. D.—FORCE ACCT.	Conduit and Siphons	21,961	605	19,985	1,976	1,219	14,567	7,394	430	11,298	10,663
18	J. F. SHEA CO., INC.	Conduit and Siphons	27,537	740	19,900	7,637	2,292	18,207	9,330	450	14,389	13,148
19	J. F. SHEA CO., INC.	Conduit and Siphons	37,364	0	0	37,364	0	0	37,364	0	0	37,364
20	J. F. SHEA CO., INC.	Siphons	18,618	0	18,618	0	0	18,618	0	0	18,618	0
20 A & B	M. W. D.—FORCE ACCT.	Siphons	735	0	705	30	0	0	735	0	0	735
3	WINSTON BROS. CO.	Siphon (Gene Inlet)	1,877	140	1,832	45	272	1,131	746	272	1,011	787
4	& WILLIAM C. CROWELL	Siphon (Copper Basin)	450	0	116	334	0	0	450	0	0	0
TOTALS			689,394	6,586	557,551	131,843	14,370	502,370	187,024	3,289	191,368	169,847

### DISTRIBUTION PIPE LINES

1	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	12,227	0	0	12,227	0	0	12,227	0	0	12,227
2	WESTERN PIPE & STL. CO.	Welded Steel Pipe	54,530	2,070	23,966	30,564	2,343	15,378	39,152	973	8,269	46,261
3	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	20,124	0	0	20,124	0	0	20,124	0	0	20,124
4	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	25,867	0	25,867	0	0	25,867	0	0	25,867	0
5	AMER. CONC. & STL. PIPE CO.	Precast Concrete Pipe	24,895	2,365	6,765	18,130	2,307	6,604	18,291	1,835	5,380	19,515
6	J. F. SHEA CO., Inc.	Precast Concrete Pipe	27,348	1,405	7,719	19,629	1,452	7,706	19,642	1,837	6,924	20,424
7	J. F. SHEA CO., Inc.	Precast Concrete Pipe	30,044	0	0	30,044	0	0	30,044	0	0	30,044
8	UNITED CONC. PIPE CORP.	Precast Concrete Pipe	24,525	1,350	18,100	6,425	1,323	17,970	6,555	1,006	15,878	8,647
TOTALS			219,560	7,190	82,417	137,143	7,425	73,525	146,035	5,651	62,318	157,242

## Miscellaneous Construction

October 10 to October 24, 1936

### AQUEDUCT PUMPING PLANTS AND APPURTENANT WORKS

CONTRACTOR	FEATURES	EXCAVATION—Cu. Yds.				CONCRETE—Cu. Yds.				STEEL—Tons			
		Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%	Est. Quan.	Period	To Date	%
WINSTON BROS. CO. & WILLIAM C. CROWELL	Intake Plant	102,400	750	98,296	96.0								
WOOD AND BEVANDA	Gene Plant	92,600	300	85,480	92.3	13,370	799	1,963	14.7	2,052	0	24.0	1.2
L. E. DIXON CO.	Iron Mt. Plant	358,700	0	224,792	62.7	19,897	1,392	1,498	7.5	1,707	75	78.4	4.6
L. E. Dixon & Case Const. Co.	Eagle Plant	227,695	8,220	150,599	66.1	21,122	0	656	3.1	2,160	0	39.2	1.8
	Hayfield Plant	328,900	34,600	41,000	12.5	32,319	0	0		2,738	0	0	0
TOTALS		43,870	600,167			2,191	4,117			75	141.6		

#### PARKER RESERVOIR—SIX COMPANIES, INC.

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnels—Excav.	3,463 Ft.	0	3,463	100
Diversion Tunnels—Concrete	3,363	0	3,363	100
Dam Excavation	1,391,000 C.Y.	7,300	313,079	22.5
Dam Concrete	277,900 C.Y.	0	0	0

#### CAJALCO RESERVOIR—GRIFFITH COMPANY

FEATURES	Est. Quan.	Period	To Date	Percent
Diversion Tunnel	2,000 Ft.	0	2,000	100
Dam & Dike Excavation	651,000 C.Y.	12,539	445,411	68.4
Dike Fill	4,113,000 C.Y.	0	3,036,000	73.8
Dam Fill	3,410,000 C.Y.	43,200	844,800	24.8

### COMPLETED FEATURES

BOULDER TRANSMISSION LINE—FRITZ ZIEBARTH					CANAL, CONDUIT AND SIPHON				
FEATURES	Length—Line MI.	Period	To Date	Percent	CONTRACTOR	FEATURE AND NAME OR SCHEDULE	Length in Miles	Work Started	Work Completed
Footings Constructed	237.0	8.0	175.0	73.8	UNITED CONC. PIPE CO	LITTLE MORONGO SIPHON	0.13	2-27-34	8-20-34
Towers Erected	237.0	13.0	134.0	56.5	M.W.D.—FORCE ACCT.	FAN HILL COND. & SIPHON	0.32	10-21-33	11-19-34
Wire Strung	237.0	19.0	101.0	42.6	MORRISON-KNUDSEN CO.	BIG MORONGO & SAN ANDREAS SIPHONS	1.86	2-12-35	9-16-36
					GRIFFITH COMPANY	Sch. No. 20-C, 21, 22, 23, 23A	12.79	1-5-35	10-13-36
					TOTALS		15.10		





Out on the transmission lines this chap is known as a "sagger." Climbing up into the tall steel towers, he clamps his transit at a predetermined height on the steel column, and sights on the sag in the conductor being strung between the towers. He talks with the ground crew through a telephone headset, his voice being transmitted over the conductor being placed. When the conductor has been pulled up until the sag, or lowest point, reaches the cross-hair in the transit, he sings out "high." The "sagger" is a District employee, who, by the use of the telephone, supervises the operation of stringing the wire. In valley regions, the towers are approximately 1200 feet apart, and the minimum height between the ground and the sag is held to 30 feet.

### VALVE AND STEEL CONTRACTS LET

Awards were made to successful bidders on October 30 by the Board of Directors of the District for contracts totaling \$387,640. The contracts cover the manufacture of 15 "plug" type pump-discharge valves to be installed in aqueduct plants, and for 487 tons of steel ribs for tunnel support in the San Jacinto tunnel.

The Pelton Water Wheel Company, of San Francisco, offered a low bid for constructing six of the pump valves and was awarded a contract amounting to \$138,994. A contract for the other valves was given to the S. Morgan Smith Co., who submitted a low bid of \$219,075 for the nine valves.

A contract for furnishing 1,000 ribs of 8-inch steel I-beam material was awarded to the Commercial Shearing and

## Safety On the Aqueduct

By T. W. OSGOOD  
Safety Engineer

The Aqueduct News of October 10, 1936, announced that the "big push" on open work construction on the main aqueduct was under way again after a four months' suspension of work because of the intense summer heat, and that approximately 1000 to 1500 men will be required for the various phases of this work, in addition to the 7400 persons already employed on the aqueduct.

The resumption of activities on the main aqueduct open work has occasioned the employment of a large number of new men, many of whom have had little or no experience in this kind of work.

It is recognized in any industry that the new man is an accident hazard because he is unfamiliar with his environment and is not cognizant of the hazards of his new employment.

An analysis of recent records for certain units of the aqueduct work indicates that about 43% of all injuries were among men who have been employed on those jobs for less than three months, and that approximately 20% of all injuries were sustained by men during their first month of employment on that work. The above emphasizes the point that the new men need help, such that will save them from injury.

The giving of that help is the direct responsibility of the superintendents, foremen, walkers, shifters and the experienced workmen, all of whom must cooperate if the best results are to be realized. To tell these new men "to be safe" would be of slight avail. They must be told "how to be safe," and how to perform their work in the right way. The effectiveness of these efforts will be indicated by the accident records and by the amount of productive work accomplished by these new men.

### EXCAVATION COMPLETED ON SAN RAFAEL NO. 2

Tunnel excavation in the 5,669-foot San Rafael tunnel No. 2 was completed on November 5. Being constructed by Dixon, Bent and Johnson, under the direction of Superintendent W. N. Evans, excavation on No. 2 was started on March 28. San Rafael Nos. 1 and 2 are known unofficially as the tri-cities tunnels, being located in Pasadena, Los Angeles, and Glendale.

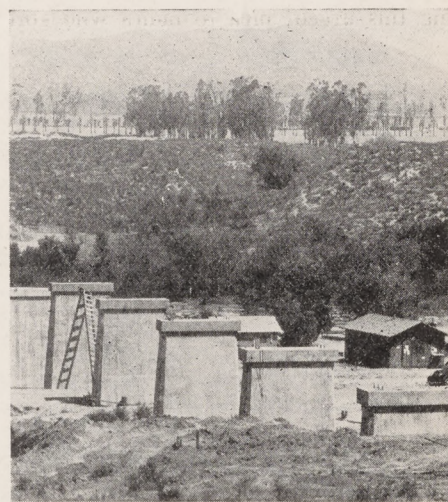
Stamping Co. This firm submitted a low bid of \$29,571 for supplying the 487 tons of steel.

## Santa Ana River Crossing 60% Completed

One of the unique features on the construction of the Colorado River Aqueduct is the building of a bridge to carry 500-million gallons of water a day across the Santa Ana River channel. Located on the upper feeder of the distributing system, a few miles west of Riverside, the river bed crossing structure is 894 feet long. It will carry a large welded steel pipe line having a capacity of 750 cubic feet of water per second—one half the capacity of the main aqueduct.

The central part of the structure is a steel bridge 544 feet in length and resting on concrete piers. In addition to this, the big steel water conduit will be supported above the river bed by other piers placed on both sides of the main channel. The bridge will be 17 feet above the highest flood water level of the river, and is at an elevation of 710 feet above sea level. Work on the structure is about 60 per cent completed at the present time.

The pipe line crossing this bridge consists of a ten-mile section of welded steel pipe, totaling approximately 30,000 tons of steel. The pipe line is schedule 2S, and the bridge itself is schedule 2B. The inside diameter of the line at the river crossing is 9 feet, 8 inches, and the average diameter of the rest of the line is 10 feet, 8 inches. The Western Pipe and Steel Co. are the contractors for 2S and 2B, and have subcontracted the bridge piers to the Dan Teeters Co. Kenneth Volk is the M. W. D. resident engineer on the two schedules.



Part of the concrete piers for the Santa Ana River crossing of the upper feeder of the Distribution System. The crossing is located a few miles west of Riverside.



# NEWS FROM FIELD AND OFFICE

Advice to football coaches. If you want to win, get hold of players who do their training on the Colorado River Aqueduct. Proof—Jack Clark, Stanford's star end who did considerable to muss up the Bruin's record on October 31, is an ex-aqueducker, having worked on the lining of the Mecca Pass tunnels. (It would be interesting to see a football squad made up entirely of hard-rockers.)



As a tribute to Anaheim from her sister cities in the District, the M. W. D. entered this float in Anaheim's annual Hallowe'en parade, staged this year on Friday night, October 30. Jack Cheatham, the L. A. Office tennis champ, and a resident of Anaheim, drove the float, and Hazel Clark of the Accounting Division rode along with the big black cats to give the required contrast—Beauty and the Beasts.

## Wanted—Lady Golfers.

The golf club, with C. C. White and James Swinford of the Accounting Division as the principal wanters, are issuing this urgent plea to ladies who golf to participate in the second of the fall series of M. W. D. tournaments to be held at the Wilson Course, Griffith Park, on November 22. Entrance fee of \$1.25 is to be in by November 14. As before, the invitation is also open to all males who are in any way associated with the aqueduct. Contractors are specially invited. That contractors have taken the invitation seriously was demonstrated at the last match held at the Harding Course (Griffith Park) on October 25. On that occasion this group took home most of the bacon. To wit: Low net, 68—J. P. McMahon, Graybar Electric Co.; Low gross, 81—G. A. Crawford, American Concrete and Steel Pipe Co.; Low net foresome, Col. Jamieson, Labor Office, Duke MacConaghy, Purchasing, J. P. McMahon, Graybar, and Harry Burton, Burton Truck Co.

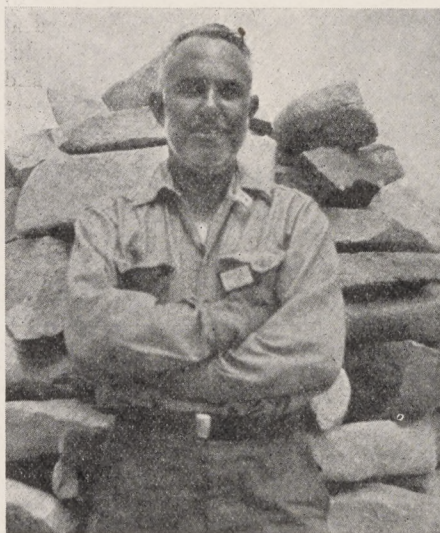
## Aqueduct Temperatures Oct. 16 to Oct. 31, 1936

	Max.	Min.
Div. 1 .....	87°	54°
Div. 2 .....	89°	54°
Div. 3 .....	86°	51°
Div. 4 .....	82°	54°
Divs. 5 and 6 .....	79°	38°

It's "Daddy" Koontz now. Dave Koontz of the Purchasing Division who has long exercised the time honored custom of getting cigars from visiting salesmen, has been passing them out recently. Yeah, we know the sentence sounds funny, but some of the recipients of the stogies claim they're the same ones they gave Dave a year or so ago. The occasion has been in honor of the arrival in the Koontz household of Jerry Starke Koontz, born October 21, weight 8 pounds, 4 ounces.

\* \* \*

Frances Purtell has decided to do her Christmas shopping early. In order to accomplish this she has been transferred from the stenographic section of the L.A. Office to the Purchasing Division.



## BEAVER

Don't be misled by the flowing white beard. The picture wasn't taken in the 60's, but instead was snapped in 1936, on the highest spot in continental United States—the top of Mt. Whitney. Peering out from behind the whiskers is Allan Patton of the Legal Division. In his defense it should be stated that he doesn't ordinarily go in for this type of satorial elegance. In this particular instance he went on a twelve-day, 125-mile hiking trip in the High Sierras, and forgot to take his razor. He says the 14,496-foot altitude of Mt. Whitney shortened his wind, but not his whiskers.

Aqueduct construction work was visited by officials of the Government of Mexico on October 20 and 21. Senor Francisco Oasquez de Mercado, Executive Director of the National Commission of Irrigation of Mexico, Senor R. Guemez Clouthier, Supervisor of Construction for the Commission, and Mr. Andrew Weiss, Consulting Engineer for the organization were included in the party making the inspection.



An aqueducker checks up on the latest construction progress tabulations in the NEWS. This serious student of the big job is Lee Kilbourn, seven months old son of Lewis and Kathryn Kilbourn. His interest is rather natural, since his father, "Kil" Kilbourn, has been with the District's telephone forces at Banning and points east since 1934, and his mother was the former Kathryn Lee of the Los Angeles Personnel Division.

Ralph Davis, Foreman in the Operating Division, has been moved upstream to Division 2 as a Senior Inspector.

\* \* \*

Another party of Mexican engineers inspected Distribution Division construction work on October 27. The group consisting of Srs. Gilberto del Arenal, Luis Favela, and Ricardo Pineda, made a particularly detailed study of the earth-fill work at the Cajalco Reservoir. All three engineers were from the Yaqui Dam project in the state of Sonora.

\* \* \*

A flash from the Operating Department tells of the birth of a son on November 1 to Mr. and Mrs. W. A. Morgan. A footnote adds that the young man who weighed 8 pounds, and 5 ounces, missed the Hallowe'en party by just one hour.



## November 1932 And November 1936

Because of the vast amount of aqueduct work accomplished to date, the uninitiated are apt to think of the Colorado River Aqueduct construction organization as being a long established unit. How very young it really is can best be illustrated by excerpts from the General Manager's report to the Board of Directors in November, 1932—just four years ago.

"November 1932 . . . Core drilling is in progress on the Iron Mt. tunnel location, and as a result of samples taken, the line was relocated near the east and west portals . . . Topographic mapping was under way in the Whipple Mountains, and camp sites were mapped along the Coachella and Coxcomb Mts. . . . Precise surveys to establish the San Jacinto tunnel axis were completed, and surveys for the same purpose were begun on the Valverde tunnel . . . Plans were revised covering proposed highways between Indio and Fargo Canyon, and between Desert Center and Earp . . . To aid in core drilling operations, roads were improved in Deception and Pushawalla Canyons . . . The highway leading from Earp to the Upper Parker damsite is nearing completion . . . Locations were made covering about 100 miles of water lines extending east from Big Morongo Creek . . . On November 9 an inspection trip was made to the Pine Canyon dam (now the Morris Dam), where concrete placing and other work were found to be going ahead in excellent shape . . . Bids were opened for a Field Headquarters Building and Garage at Banning, and for transmission lines and substations. (These lines were the construction power lines, and not the 230 kv Boulder transmission line now under construction.)"

Only four short years ago and none of the aqueduct or distribution features were beyond the paper stage, and even the roads and utility systems were "proposed". Contrast these items with the construction progress tabulations in this issue of the NEWS. Four years ago work at Iron Mt. tunnel was in the exploratory stage, and today this tunnel and others totaling more than 66 miles have been lined and more than 101 miles of tunnel have been excavated. Today the entire construction program is approximately half completed.

## Who's Who On the Aqueduct

**STEPHEN M. GRIFFITH**  
*President and General Manager,  
The Griffith Co.*

Erie County, Pennsylvania was his birth place, September 3, 1880 . . . Graduate of the University of Wisconsin in 1903 . . . First construction work was with the Barber Asphalt Company, New York, in 1900 . . . Between 1900 and 1907, construction in Spokane, Seattle, and Northwest . . . Has been located in Southern California since 1907 . . . Contracting industry, principally highways, and heavy engineering work . . . His firm had contract for main aqueduct schedules 20A, 20B, 20C, 21, 22, 23,



Stephen M. Griffith

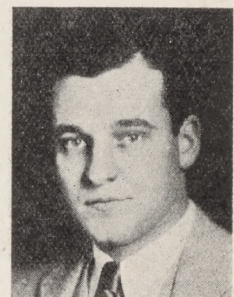
and 23A. At the present time all of firm's aqueduct activities are centered at Cajalco Reservoir where they are building the dam and dike. . . Is married, and has one son . . . Hobbies are desert ranching—and, the other extreme—sailing on Newport Bay . . . Is a past president of local chapter of Associated General Contractors.

**THOMAS S. CAREY, M. D.**  
*Chief Surgeon, Metropolitan Water District*

A bona fide resident of the District, born in Los Angeles, July 5, 1893 . . . Educated at Stanford, and the University of Chicago, M.D. degree received Stanford 1920 . . . After graduation engaged in general surgical private practice . . . 1920-24 Surgeon, Baker Iron Works,



Dr. T. S. Carey



J. B. Bonny

Los Angeles . . . 1924-1927 and 1929-1933, engaged part time as Assistant Police Surgeon, City of L. A., Georgia Street Receiving Hospital . . . From 1927 to 1933 retained by State Industrial Accident Commission as Expert Medical Examiner . . . Has been Chief Surgeon of M. W. D. since February 1, 1933 . . . He is married, and has one son.

**J. B. BONNY**  
*District Manager for Morrison-Knudsen Company*

Another native son, born in San Francisco, February 8, 1903 . . . Graduated from University of California in 1925 . . . Connected with engineering con-

struction work since 1927, principally canals and tunnels. . . With Morrison-Knudsen as Superintendent and District Manager since 1931 . . . 31-32 Washington, Oregon, and Idaho . . . Since 1932 District Manager, Los Angeles Office of firm . . . His firm had contracts for Mecca Pass tunnels, Big Morongo and San Andreas siphons, and sub-contract under Shea Co., on schedules 18, and 19. . . At present time firm has sub-contract under Western Pipe & Steel Co., for excavation on Distribution schedule 2S . . . Mr. Bonny is married and has five children . . . Is a member of Board of Directors of A. G. C. . . . Hobby is flying. Has over 300 hours flying time, and Department of Commerce license.

### GRIFFITH CO. MAKE MOTOR EXPERIMENT

Contractors are watching with interest the experiment of the Griffith Co. at Cajalco in replacing the heavy motors in their earth hauling trucks with the light motor of a well known passenger car manufacturer. Due to constant and hard use, the original motors in the trucks are beginning to wear out. If they can be successfully replaced with a \$250 motor—as against the \$2,000 cost of the original engines, it will result in a decided saving to the operators.

### PARKER DAM SCHOOL GROWS

The public school at Parker Dam, the largest on the aqueduct, now has a total enrollment of 249 pupils in all eight elementary grades, and high school. Situated within a mile of the damsite, the school is a branch of the Needles District in San Bernardino County. Beginning with 73 pupils at the Crossroads in 1934, the school has grown in direct proportion with activities at the dam, and the nearby aqueduct features. The school moved to Parker Dam in 1934.